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(54) **Fuzzy genetic learning automata classifier**

(57)   A method is provided for deriving a near-optimal fuzzy automaton for a given separation problem. The method includes the steps of: forming a first generation population (24) of fuzzy automata, where the first generation population of fuzzy automata includes a plurality of fuzzy automata; performing a mutation operation (28) on each fuzzy automaton in the first generation population of fuzzy automata; reproducing the first generation population of fuzzy automata using a survival of the fittest operation (30, 32, 34); and applying a cross-over operator (36) to the reproduced first generation population of fuzzy automata, thereby yielding a next-generation population of fuzzy automata. A near-optimal fuzzy automaton is identified by evaluating the performance (38) of each fuzzy automaton in the next-generation population; otherwise the methodology is repeated until a near-optimal fuzzy automaton is derived for the given separation problem.
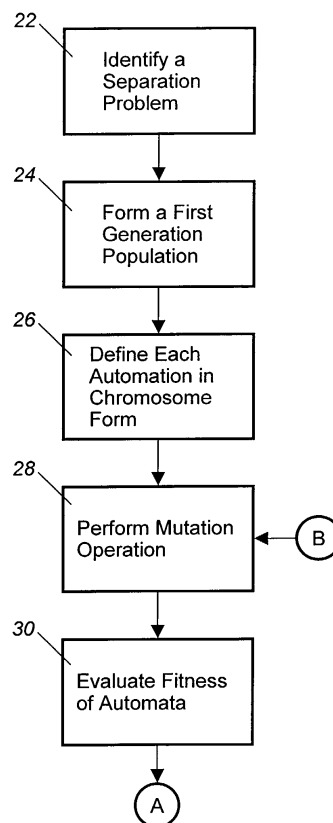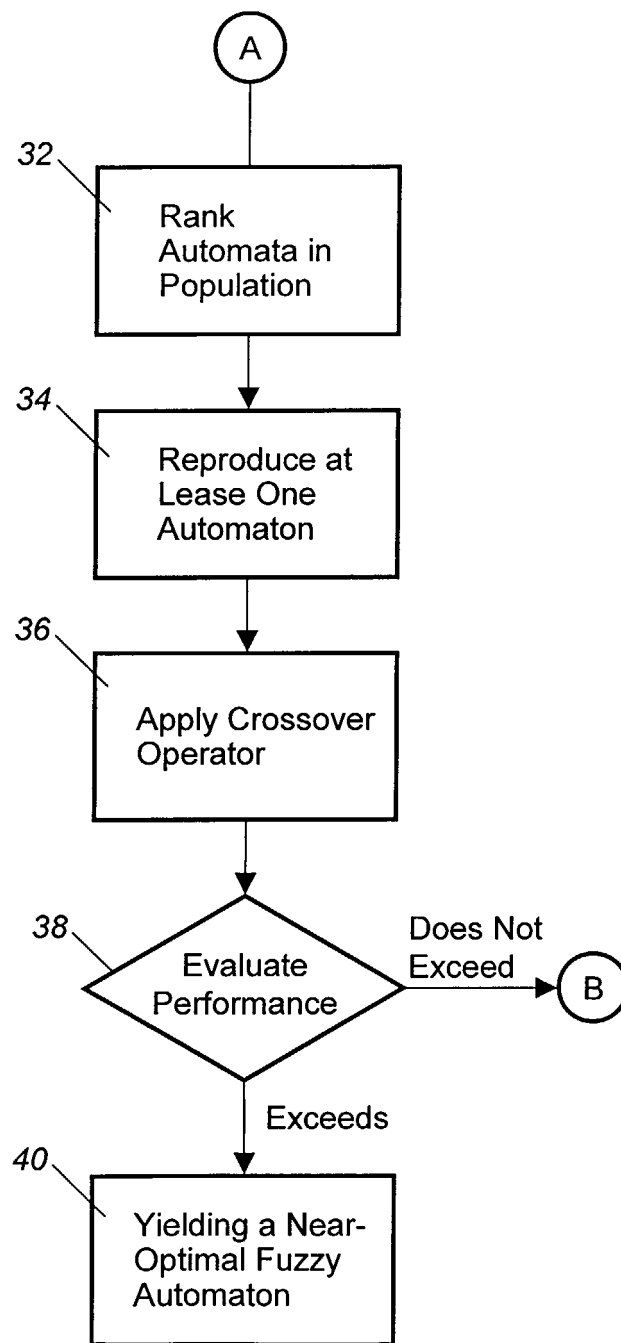
Figure 2A

A

32 — Rank
Automata in
Population

34 — Reproduce at
Lease One
Automaton

36 — Apply Crossover
Operator

38 — Evaluate
Performance

Does Not
Exceed

B

Exceeds

40 — Yielding a Near-
Optimal Fuzzy
Automaton

Figure 2B

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EUROPEAN SEARCH REPORT

Application Number

EP 02 01 7949

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	UNOLD OLGIERD: "A brief sketch of an evolutionary method for developing architecture of natural language parser" PROCEEDINGS OF INTERNATIONAL WORKSHOP ON SOFT COMPUTING IN INDUSTRY '99 (IWSCI'99), 16-18 JUNE 1999, HOKKAIDO, JAPAN, June 1999 (1999-06), pages 411-415, XP008076230 IWSCI'99, Muroran Inst. of Technol., Muroran, Japan ISBN: 4-9900489-1-1	1-5,7-10	INV. G06N3/12 G06N7/02
Y	* the whole document *	6	
Y	UNOLD OLGIERD: "A genetically-optimised fuzzy parser of natural language" PROCEEDINGS OF THE SECOND INTERNATIONAL CONFERENCE ON INTELLIGENT PROCESSING AND MANUFACTURING OF MATERIALS (IPMM'99), 10-15 JULY 1999, HONOLULU, HI, USA, vol. 1, July 1999 (1999-07), pages 277-280, XP002424292 IPMM'99 (Cat. No.99EX296) IEEE, Piscataway, NJ, USA ISBN: 0-7803-5489-3 * the whole document *	6	
A	WEE W G, AND FU K S: "A formulation of fuzzy automata and its application as a model of learning systems" IEEE TRANSACTIONS ON SYSTEMS SCIENCE AND CYBERNETICS, vol. SSC-5, no. 3, June 1969 (1969-06), pages 215-223, XP002424293 USA ISSN: 0536-1567 Section II	2,7,9	

TECHNICAL FIELDS SEARCHED (IPC)

G06N
G06F
G06K
G05B

-/--

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 March 2007	Douarche, Nicolas

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	FOGEL D B: "AN INTRODUCTION TO SIMULATED EVOLUTIONARY OPTIMIZATION" IEEE TRANSACTIONS ON NEURAL NETWORKS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 5, no. 1, January 1994 (1994-01), pages 3-14, XP000441905 ISSN: 1045-9227 Sections II and III -----	3,4,8	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 March 2007	Douarche, Nicolas

CATEGORY OF CITED DOCUMENTS

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